



APPENDIX I
CLAIMS

40. A trawl¹ comprising:
a plurality of mesh cells², each mesh cell including at least
three mesh bars³, at least one portion of at least a first mesh bar
in at least one of the mesh cells including:

- 5 a. a first product strand⁴ having a core product strand⁵
enclosed within a sheath⁶ that resists sliding along the
core product strand during assembly and field operations
of the trawl; and
- 10 b. a mechanical connection⁷ couples the first product strand
forming the first mesh bar to a second product strand
forming a second mesh bar of the at least one mesh cell,
the mechanical connection including a clamp⁸ which

¹ See mid-water trawl 13 in FIGs. 1 and 2, and mid-water trawl 263 in FIGs. 8 and 9.

15 ² See mesh cells 30 in FIGs. 1 and 2, and mesh cells 280 in FIGs. 9 and 9.

³ See mesh bars 35 in FIG. 3, and mesh bars 283 in FIG. 10.

⁴ See PRODUCT STRAND definition on page 7. lines 10-17; FIG. 14, strap 284"; FIG. 15, strap 284".

20 ⁵ See FIG. 14, single larger diameter product strand 400; FIG. 15, strand 410.

⁶ See FIG. 14, sheath 401; FIG. 15, sheath 411; FIG. 16, sheath 420.

25 ⁷ See definition of MESH CELL page 5, line 38 through page 6, line 7; FIG. 2, coupler 34

⁸ See FIG. 20 and text on page 16 at lines 22-24.

encloses at least the slide-resistant, sheathed portion
of the first product strand,

whereby the sheathed portion of the first product strand
30 disposed within the clamp resists separation of the sheath from the
core product strand during trawl assembly and field operations thus
better preserving design characteristics of the first mesh bar and
the trawl.

41. The trawl of claim 40 wherein the sheath encircling the
slide-resistant portion of the first product strand includes a
plurality of product strands which both encircle and have a smaller
diameter than the core product strand⁹, at least several of the
5 encircling product strands that are disposed within the clamp being
sufficiently densely woven that the sheath resists movement
relative to the core product strand.

42. The trawl of claim 40 wherein the sheath encircling the
slide-resistant portion of the first product strand includes a
plurality of product strands which both encircle and have a smaller
diameter than the core product strand¹⁰, at least several of the

5 ⁹ See FIG. 29 and the texts describing that FIG. on page 10
 in lines 1-2 and page 22 in lines 4-8.

¹⁰ See FIG. 29 and the texts describing that FIG. on page 10
 in lines 1-2 and page 22 in lines 4-8.

encircling product strands that are disposed within the clamp being
10 sufficiently densely woven that the sheath maintains a cross
sectional shape of the slide-resistant, sheathed portion of the
first product strand during field operations.

43. The trawl of claim 40, 41, or 42 wherein the mechanical
connection coupling the first product strand to the second mesh bar
includes a first loop formed at an end of the first product
strand¹¹, the first loop being formed by two segments of the first
5 product strand that are secured to each other by the clamp.

44. (Canceled)

45. The trawl of claim 41 wherein the core product strand
includes a twisted product strand¹².

46. The trawl of claim 41 wherein the core product strand
includes a heat-set¹³, twisted product strand¹⁴.

¹¹ See FIG. 20 and text on page 16, line 28 through page 17,
line 2.

¹² See the definition of PRODUCT STRAND on page 7 in lines
10-17.

¹³ See page 12 at lines 18-26.

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47. The trawl of claim 41 wherein the core product strand includes a braided product strand¹⁵.

48. The trawl of claim 41 wherein the core product strand includes a heat-set¹⁶, braided product strand¹⁷.

49. The trawl of claim 41 wherein the core product strand includes a parallel laid product strand¹⁸.

50. The trawl of claim 41 wherein the core product strand includes a heat-set¹⁹, parallel laid product strand²⁰.

¹⁴ See the definition of PRODUCT STRAND on page 7 in lines 10-17.

¹⁵ See the definition of PRODUCT STRAND on page 7 in lines 10-17.

¹⁶ See page 12 at lines 18-26.

¹⁷ See the definition of PRODUCT STRAND on page 7 in lines 10-17.

¹⁸ See the definition of PRODUCT STRAND on page 7 in lines 10-17.

¹⁹ See page 12 at lines 18-26.

²⁰ See the definition of PRODUCT STRAND on page 7 in lines 10-17.

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51. The trawl of claim 41 wherein the core product strand includes a bonding agent²¹.

52. The trawl of claim 51 wherein the bonding agent is a polymer²².

53. The trawl of claim 52 wherein the polymer is a urethane based polymer²³.

54. The trawl of claim 40, 41, 42 or 45 wherein the core product strand has substantially minimum residual torque²⁴.

55. The trawl of claim 40, 41, 42 or 45 wherein the slide-resistant, sheathed portion of the first product strand has substantially minimum residual torque²⁵.

²¹ See page 12 at lines 27-38.

²² See page 12 at lines 27-38.

²³ See page 12 at lines 27-38.

²⁴ See FIGs. 30A through 30E on new drawing sheet 20 and the text describing those FIGs which appears in the text added by this response to page 12.

²⁵ See FIGs. 30A through 30E on new drawing sheet 20 and the text describing those FIGs which appears in the text added by this Response to page 12.

56. The trawl of claim 43 wherein the core product strand has substantially minimum residual torque²⁶.

57. The trawl of claim 43 wherein the slide-resistant, sheathed portion of the first product strand has substantially minimum residual torque²⁷.

58. (Cancelled)

59. (Cancelled)

60. (Withdrawn) A thread comprising:

- a. a core product strand; and
- b. an encircling sheath having:
 - i. a plurality of encircling product strands each having a smaller diameter than a diameter of the core product strand of the thread; and
 - ii. at least one spiraling product strand interwoven with the encircling product strands and having a

²⁶ See FIGs. 30A through 30E on new drawing sheet 20 and the text describing those FIGs which appears in the text added by this Response to page 12.

²⁷ See FIGs. 30A through 30E on new drawing sheet 20 and the text describing those FIGs which appears in the text added by this Response to page 12.

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15 diameter that is larger than the diameter of each
 of the encircling product strands.

61. (Withdrawn) The thread of claim 60 wherein the
diameter of the spiraling product strand is less than the diameter
of the core product strand.

62. (Withdrawn) The thread of claim 60 or 61 wherein the
thread is mechanically secured to another object by a clamp.

63. (Withdrawn) The thread of claim 60 or 61 wherein a
loop is formed in the thread for securing the thread to another
object, the loop being formed by two segments of the thread that
are mechanically secured to each other by a clamp.

64. (Withdrawn) A trawl comprising:
a plurality of mesh cells, each mesh cell including at least
three mesh bars:

5 a. at least one portion of at least a first mesh bar in at
 least one of the mesh cells having:
 i. a core product strand encircled by a sheath, the
 sheath including a plurality of encircling product

- strands each having a smaller diameter than a diameter of the core product strand; and
- 10 ii. at least one spiraling product strand interwoven with the encircling product strands and having a diameter that is larger than the diameter of each of the encircling product strands; and
- 15 b. a mechanical connection couples the first product strand forming the first mesh bar to a second product strand forming a second mesh bar of the at least one mesh cell, the mechanical connection including a clamp which encloses at least the first product strand.

65. (Withdrawn) The trawl of claim 64 wherein the mechanical connection coupling the first product strand to the second mesh bar includes a first loop formed at an end of the first product strand, the first loop being formed by two segments of the
5 first product strand that are secured to each other by the clamp.

66. (Withdrawn) The trawl of claim 65 wherein an end of the second product strand forming the second mesh bar includes a second loop, and wherein the second loop passes through the first loop.

67. An improved method for catching fish with a trawl system comprising the steps of:

a. assembling the trawl system by combining components selected from a group consisting of a trawl²⁸, upper
5 bridles²⁹ and frontropes³⁰, the trawl including a plurality of mesh cells³¹, each mesh cell including at least three mesh bars³²:

i. at least one portion of at least a first mesh bar
in at least one of the mesh cells including a first
10 product strand³³ having a core product strand³⁴ enclosed within a sheath³⁵ that resists sliding along

²⁸ See mid-water trawl 13 in FIGs. 1 and 2, and mid-water trawl 263 in FIGs. 8 and 9.

²⁹ See definition of BRIDLES on page 8 at lines 15-18; bridles 20 in FIG. 1, and towing bridles 270 in FIG. 8.

³⁰ See definition of FRONTROPE(S) on page 8 at lines 10-14; and frontropes 271 in FIG. 8.

³¹ See mesh cells 30 in FIGs. 1 and 2, and mesh cells 280 in FIGs. 9 and 9.

³² See mesh bars 35 in FIG. 3, and mesh bars 283 in FIG. 10.

³³ See PRODUCT STRAND definition on page 7. lines 10-17; FIG. 14, strap 284"; FIG. 15, strap 284".

³⁴ See FIG. 14, single larger diameter product strand 400; FIG. 15, strand 410.

³⁵ See FIG. 14, sheath 401; FIG. 15, sheath 411; FIG. 16, sheath 420.

the core product strand during assembly and field operations of the trawl; and

ii. a mechanical connection³⁶ couples the first product strand forming the first mesh bar to a second product strand forming a second mesh bar of the at least one mesh cell, the mechanical connection including a clamp³⁷ which encloses at least the first product strand; and

b. from a vessel³⁸ disposed on a surface³⁹ of a body of water⁴⁰:

i. deploying into the body of water as part of the trawl system the sheathed, first mesh bar; and

ii. propelling at least the sheathed, first mesh bar through the body of water.

³⁶ See definition of MESH CELL page 5, line 38 through page 6, line 7; FIG. 2, coupler 34

³⁷ See FIG. 20 and text on page 16 at lines 22-24.

³⁸ See reference number 10 in FIGs. 1 and reference number 260 in FIG. 8, and the texts which respectively describe those FIGs.

³⁹ See reference number 11 in FIGs. 1 and reference number 261 in FIG. 8, and the texts which respectively describe those FIGs.

⁴⁰ See reference number 12 in FIGs. 1 and reference number 262 in FIG. 8, and the texts which respectively describe those FIGs.

68. The improved method for catching fish of claim 67 wherein the sheath encircling the slide-resistant portion of the first product strand is formed with a plurality of product strands which both encircle and have a smaller diameter than the core product strand⁴¹, at least several of the encircling product strands that are disposed within the clamp being sufficiently densely woven that the sheath resists movement relative to the core product strand.

69. The improved method for catching fish of claim 67 wherein the sheath encircling the slide-resistant portion of the first product strand is formed with a plurality of product strands which both encircle and have a smaller diameter than the core product strand⁴², at least several of the encircling product strands that are disposed within the clamp being sufficiently densely woven that the sheath maintains a cross sectional shape of the slide-resistant, sheathed portion of the first product strand during field operations.

70. The improved method for catching fish of claim 67, 68, or 69 wherein assembling the trawl system includes forming a first

⁴¹ See FIG. 29 and the texts describing that FIG. on page 10 in lines 1-2 and page 22 in lines 4-8.

5 ⁴² See FIG. 29 and the texts describing that FIG. on page 10 in lines 1-2 and page 22 in lines 4-8.

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loop at an end of the first product strand⁴³ by clamping together two segments of the first product strand.

71. (Cancelled)

72. The improved method for catching fish of claim 67, 68 or 69 wherein the core product strand is formed with substantially minimum residual torque⁴⁴.

73. The improved method for catching fish of claim 67, 68 or 69 wherein the slide-resistant, sheathed portion of the first product strand is formed with substantially minimum residual torque⁴⁵.

⁴³ See FIG. 20 and text on page 16, line 28 through page 17, line 2.

⁴⁴ See FIGs. 30A through 30E on new drawing sheet 20 and the text describing those FIGs which appears in the text added by this Response to page 12.

⁴⁵ See FIGs. 30A through 30E on new drawing sheet 20 and the text describing those FIGs which appears in the text added by this Response to page 12.

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74. The improved method for catching fish of claim 70 wherein the core product strand is formed with substantially minimum residual torque⁴⁶.

75. The improved method for catching fish of claim 70 wherein the slide-resistant, sheathed portion of the first product strand is formed with substantially minimum residual torque⁴⁷.

76. (Cancelled)

77. (Cancelled)

⁴⁶ See FIGs. 30A through 30E on new drawing sheet 20 and the text describing those FIGs which appears in the text added by this Response to page 12.

⁴⁷ See FIGs. 30A through 30E on new drawing sheet 20 and the text describing those FIGs which appears in the text added by this Response to page 12.